

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/021714

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K14/315

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE, WPI Data, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | <p>GUBBA SIDDESWAR ET AL: "Expression and characterization of group A Streptococcus extracellular cysteine protease recombinant mutant proteins and documentation of seroconversion during human invasive disease episodes" INFECTION AND IMMUNITY, vol. 66, no. 2, February 1998 (1998-02), pages 765-770, XP002304245 ISSN: 0019-9567 page 765 - page 167</p> <p style="text-align: center;">----- -/--</p> | 1-71 |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *O* document referring to an oral disclosure, use, exhibition or other means
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- * & * document member of the same patent family

Date of the actual completion of the international search

8 November 2004

Date of mailing of the international search report

19/11/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Young, C

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| X | ----- MUSSER JAMES M ET AL: "Substitution of cysteine 192 in a highly conserved Streptococcus pyogenes extracellular cysteine protease (interleukin 1-beta convertase) alters proteolytic activity and ablates zymogen processing" INFECTION AND IMMUNITY, vol. 64, no. 6, 1996, pages 1913-1917, XP002304246 ISSN: 0019-9567 the whole document | 1-71 |
| X | ----- KAGAWA TODD F ET AL: "Crystal structure of the zymogen form of the group A Streptococcus virulence factor SpeB: An integrin-binding cysteine protease" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 97, no. 5, 29 February 2000 (2000-02-29), pages 2235-2240, XP002149908 ISSN: 0027-8424 the whole document | 1-71 |
| X | ----- FAGIN URSULA ET AL: "Exclusion of bioactive contaminations in Streptococcus pyogenes erythrogenic toxin A preparations by recombinant expression in Escherichia coli" INFECTION AND IMMUNITY, vol. 65, no. 11, 1997, pages 4725-4733, XP002304247 ISSN: 0019-9567 the whole document | 1-71 |
| X | ----- KAPUR VIVEK ET AL: "A conserved Streptococcus pyogenes extracellular cysteine protease cleaves human fibronectin and degrades vitronectin" MICROBIAL PATHOGENESIS, vol. 15, no. 5, 1993, pages 327-346, XP002304248 ISSN: 0882-4010 page 340 - page 341 ----- -/-- | 1-71 |

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| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| A | KING JONATHAN ET AL: "Thermolabile folding intermediates: Inclusion body precursors and chaperonin substrates" FASEB JOURNAL, vol. 10, no. 1, 1996, pages 57-66, XP002304249 ISSN: 0892-6638 the whole document ----- | 1-71 |
| A | TAN S: "A MODULAR POLYCYSTRONIC EXPRESSION SYSTEM FOR OVEREXPRESSING PROTEIN COMPLEXES IN ESCHERICHIA COLI" PROTEIN EXPRESSION AND PURIFICATION, ACADEMIC PRESS, US, vol. 21, 2001, pages 224-234, XP001087869 ISSN: 1046-5928 the whole document ----- | 1-71 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
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| | | WO 9849311 A2 | 05-11-1998 |
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| | | US 2004009551 A1 | 15-01-2004 |
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